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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/893,557 | 06/29/2001 | Dong Guk Kim | 8733.475.00 | 5066 |

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EXAMINER

QI, ZHI QIANG

| ART UNIT | PAPER NUMBER |
|----------|--------------|
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2871

DATE MAILED: 02/24/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/893,557

Applicant(s)

KIM ET AL.

Examiner

Mike Qi

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 January 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) 11 and 12 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant admitted prior art in view of US 5,724,107 (Nishikawa et al).

Claims 1 and 5, Applicant admitted prior art (specification page 2, line 12 – page 8, line 7; Figs 1 – 2) ^{discloses} a reflective and a transfective liquid crystal display device comprising:

- a plurality of gate lines (102 or 202) and data lines (105 or 205) intersecting on a first substrate (101 or 201), the gate line and the data line defining pixel areas ((I) or a reflection part (I) and a transmission part (II));
- a plurality of thin film transistors (TFTs) formed at the intersections of the gate lines (102 or 202) and the data lines (105 or 205), and each thin film transistor having gate electrode (102a or 202a), semiconductor layer (104 or 204), source electrode (105a or 205a) and drain electrode (105b or 205b);
- a capacitor lower electrode (102c or 202c) of a storage capacitor formed on the same plane as a gate line (102 or 202);

- a first insulation film (gate insulation film 103 or 203) inserted between the capacitor upper electrode (105c or 205c) and the capacitor lower electrode (102c or 202c);
- a TFT array substrate (101) connected with the drain electrode (105b) and including the reflective electrode (107) formed at the pixel areas (I), and the reflective electrode (107) is formed above the drain electrode (105b) and is connected to the drain electrode (105b).

(concerning claim 5)

- a reflective electrode (207a) connected with the drain electrode (205b), and formed on the reflection area (I) above the drain electrode (205b);
- a TFT area substrate (201) connected with the reflective electrode (207a) and including the transmissive electrode (207b) formed at the transmission area (II).

Applicant admitted prior art does not expressly disclose that a capacitor upper electrode formed integrally with the drain electrode on the capacitor lower electrode.

However, Nishikawa discloses (col.1, line 49 – col. 2, line 65; Figs.1-2) a conventional liquid crystal display having a storage capacitor electrode (12) that is presented along a periphery of the pixel electrode (14P) and overlaps with the pixel electrode (14P) on the substrate (10) with the insulation layer (13) sandwiched therebetween to form a storage capacitor. Therefore, the pixel electrode (14P) (conductive material) would be the capacitor upper electrode and electrode (12) would be the capacitor lower electrode, and the capacitor upper electrode (such as the

conductive material 14P) is formed integrally with the source electrode (14s) on the capacitor lower electrode (12). It was common and known in the art that the source electrode and the drain electrode having staggered structure and having same function, and that such structure showing in the Figs.1-2 are a conventional liquid crystal display, and the storage electrode (12) functions not only as the storage capacitor but also as a light-shielding layer covering the periphery of the pixel electrode (14P) to improve the aperture ratio of the display.

Therefore, it would have been obvious to those skilled in the art at the time the invention was made to arrange a capacitor upper electrode formed integrally with the drain electrode on the capacitor lower electrode as claimed in claims 1 and 5 such as taught from the conventional liquid crystal display.

Claims 2 and 7, Applicant admitted prior art discloses (page 5, lines 6-7 and page 6, lines 19-20) that the material of the insulation films uses silicon nitride (SiNx) or silicon oxide, and that would have been at least obvious.

Claims 3 and 8, an insulation film must be arranged between two conductive electrodes to constitute a capacitor. Applicant admitted prior art discloses (Fig.2B) that a second passivation film (206b) (insulation film) is disposed between the reflective electrode (207a) and the transmissive electrode (207b) and that the transmissive electrode (207b) would be a capacitor upper electrode constituting a capacitor with the reflective electrode (207a), and that would have been at least obvious.

Claims 4 and 9, Applicant admitted prior art discloses (page 5, lines 6-7 and page 6, lines 19-20) that the material of the insulation films uses silicon nitride (SiNx) or silicon oxide, and that would have been at least obvious.

Claim 6, Nishikawa discloses (col.2, lines 53-65; Figs.1-2) that the pixel electrode (14P) and the non-transparent storage capacitor electrode (12) (a reflective electrode) with the insulating layer (13) constitutes a storage capacitor, and the capacitor upper electrode (14P) extends along a boundary part between the reflective electrode (12) and the pixel electrode (14P) (a transparent electrode), such that the display area would be larger and would improve the aperture ratio. Therefore, it would have been obvious to those skilled in the art at the time the invention was made to arrange a capacitor upper electrode extends along a boundary part between the reflective electrode and the transmissive electrode as claimed in claim 6 for improving the aperture ratio.

Claim 10, Applicant admitted prior art discloses (Fig.2B) that a second passivation film (206b) (insulation film) is disposed between the reflective electrode (207a) and the transmissive electrode (207b).

Response to Arguments

3. Applicant's arguments filed on Jan.3, 2003 have been fully considered but they are not persuasive.

Applicant's **only** arguments are as follows:

1) the references Applicant admitted prior art (Figs.1-2) and Nishikawa do not

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teach the limitations such as the capacitor upper electrode is formed integrally with the drain electrode and the reflective electrode is formed above and connected to the drain electrode as claimed in the claims 1 and 5.

Examiner's responses to Applicant's **only** arguments are as follows:

1) Applicant's admitted prior art discloses (Figs.1-2) that the reflective electrode (107) is formed above the drain electrode (105b) and is connected to the drain electrode (105b); and the reflective electrode (207a) is connected with the drain electrode (205b), and it is formed on the reflection area (I) above the drain electrode (205b). The reference Nishikawa discloses (col.1, line 49 – col. 2, line 65; Figs.1-2) that the pixel electrode (14P) (conductive material) would be the capacitor upper electrode and electrode (12) would be the capacitor lower electrode, and the capacitor upper electrode (such as the conductive material 14P) is formed integrally with the source electrode (14s) on the capacitor lower electrode (12). It was common and known in the art that the source electrode and the drain electrode having staggered structure and having same function. Such structure discloses in the reference Nishikawa (Figs.1-2) are a conventional liquid crystal display, and the storage electrode (12) functions not only as the storage capacitor but also as a light-shielding layer covering the periphery of the pixel electrode (14P) to improve the aperture ratio of the display.

Conclusion

4. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mike Qi whose telephone number is (703) 308-6213.

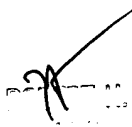
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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Mike Qi
February 14, 2003


MICHAEL QI
February 14, 2003